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EXAMINER

AMRANY, ADI

ART UNIT	PAPER NUMBER
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2836

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/506,944	WOBBEN, ALOYS	
	Examiner	Art Unit	
	Adi Amrany	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19,21-23 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19,21-23 and 25-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed January 18, 2007 have been fully considered but they are not persuasive.

Regarding Wichert ("PV-Diesel Hybrid Energy Systems..."), a further reading of the reference reveals that the author disclosed the 1-2-3 order of operation of the wind, battery, and engine power sources. In the discussion of the two power management strategies (transient peak and average load) on pages 218-219, Wichert states that the interim electrical energy storage units are discharged in order to minimize the number of diesel generators that are operating. This clearly shows the 2-3 order of activating the storage devices (batteries) before the generator. The footnote (#7) at the bottom of page 218, discloses that the 2-3 operation is calculated *after* the power supplied from the wind energy system is taken into account (net load). Wichert discloses that the wind energy producer is always on. Thus, the wind energy producer is the first source of power in the Wichert 1-2-3 energy source order of activation.

Claim Objections

2. Claims 7 and 18 and objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 7 recites the limitation of a controller, which has been added as a limitation of claim 1. Claim 18 recites the limitations of a bus bar and device for detecting the power required in the network, both of which are included in claim 1.

3. Claim 8 is objected to because there is no basis for the term, "electrical element." Electrical element is a limitation of claim 3, but claim 8 depends from claim 2.

Appropriate correction is required.

Double Patenting

4. Claims 1-6, 8-19 and 21-23 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-28 of copending Application No. 10/380,786. Although the conflicting claims are not identical, they are not patentably distinct from each other for the reasons provided below. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The present and copending application use slightly different names to refer to the same components. These components were provided in their respective specification with identical descriptions. They are:

- a. "first power generator" in the present application is identical to the "first energy producer" in the copending application;

- b. "renewable energy source" is identical to a "regenerative energy source;"
- c. "wind-power station" is identical to the "wind energy system;"
- d. "electrical intermediate storage device" is identical to the "interim electricity storage unit;"
- e. "dc voltage intermediate circuit" is identical to the "dc link;"
- f. "boost/buck converter" is identical to "step-up or step-down converter;"
- g. "network-commutated inverter" is identical to the "line-commuted dc-ac converter;"
- h. "electromagnetic coupling" is identical to the "electromagnetic clutch;"
- i. "primary power generator" is identical to the "first primary energy producer first;"
- j. "network generator" is identical to the function of the "pulse-former;"

Claims 1-6 and 8-17 of the present application are drawn to the subject matter of claims 1-6 and 8-17 of the '786 application, respectively. Claim 1 of the present application contains two limitations not contained in the '786 application, namely: the bus bar and device for detecting the power required in the network. These components are not explicitly recited in '786, but are inherent components. Without a bus bar, there would be no connection between the energy source and the load. Without a device for detecting the power required in the network, there would be no way basis to calculate when to activate each of the energy sources.

Claims 19 and 21-23 are rejected as obvious type double patenting because the method recited within the claims follows on the apparatus of claims 1-15 of the

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compending '786 application. Claim 25 of the present application is drawn to claim 20 of the compending '786 application:

Claim 26 and new claims 27-29 are rejected as obvious type double patenting because they are being drawn to the same subject matter as claim 1.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3-4, 7-8, 19, 21-23, 26-27 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Wichert ("PV-Diesel Hybrid Energy Systems for Remote Area Power Generation – A Review of Current Practice and Future Developments").

With respect to claim 1, Wichert discloses an isolated electrical network (figure 1 on page 213; page 209, Introduction, lines 1-3) comprising:

at least one first power generator (figure 1, "wind generator"; page 212, lines 1-3), coupled to a wind turbine to produce electrical power;

a second generator coupled to an internal combustion engine which uses a renewable energy source (figure 1, "diesel engine + alternator");

a bus bar (figures 1-2);

a device connected to the bus bar for detecting the power required in the network (pages 218-219);

at least one intermediate storage device for storing electrical energy coupled to the first power generator (figures 1-2, "battery bank;" page 222); and a controller (figure 2; unlabeled oval) operable to, in response to the required power in the network being less than power generated by the first power generator, first control power provided by the wind turbine that is delivered to the network; in response to the required power in the network being greater than the power generated by the first power generator, second control power provided by the electrical intermediate storage device that is delivered to the network; and in response to the detected power required in the network being greater than the power generated by the first power generator and provided by the electrical intermediate device, third control power provided by the second generator coupled to the internal combustion engine that is delivered to the network (page 218 last paragraph through 219, first paragraph, including footnote 7).

Wichert discloses that the regenerative energy system is always on (page 218, footnote 7). The net load, which is the load to be powered by the electrical intermediate storage device and the combustion engine, is calculated *after* the energy produced by the wind turbine is taken into account. Wichert then discloses that the electrical intermediate storage device is discharged before the engine to minimize the usage of the combustion engines. Wichert discloses the claimed 1-2-3 order of activation. Furthermore, in order to calculate the net load, it is *inherent* that Wichert includes a device for detecting the power required in the network.

With respect to claim 3, Wichert further discloses at least one electrical element (figures 1-2, "battery bank"; page 211, lines 26-28) connected to the dc voltage intermediate circuit for feeding electrical energy with dc voltage. The bank contains a plurality of battery units.

With respect to claim 4, Wichert discloses that the electrical element comprises one selected from a group consisting of a photovoltaic element, a mechanical energy storage device, an electrochemical storage device, a capacitor, and a chemical storage device. (figure 2, page 222).

With respect to claim 7, Wichert discloses a controller, as discussed above.

With respect to claim 8, Wichert further discloses a boost/buck converter (figure 1, "battery charger"; page 222) coupled between the electrical element and the dc voltage intermediate circuit.

With respect to claims 19 and 21-22, Wichert discloses the apparatus necessary to complete the recited methods, as discussed above in the rejection of claim 1.

With respect to claim 23, Wichert further discloses delivering energy from electrical intermediate storage devices (figure 1, "battery bank"; page 211, lines 26-28) to overcome frequency instabilities or deviations in the network power frequency from its desired value.

With respect to claim 26, Wichert further discloses for the case that the output power of the first power generator is greater than the power of the load required in the network, initially electrical energy of the first generator is supplied to the intermediate storage device if the intermediate storage device is not full (page 222, lines 13-15).

With respect to claim 27, Wichert discloses the wind-power station (figure 1, page 218).

With respect claim 29, Wichert discloses the intermediate storage device is at least one of an accumulator block type and a battery storage device (figures 1-2, "battery bank").

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 11-14, 16-18, 25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wichert in view of De Zeeuw ("On the Components of a Wind Turbine Autonomous Energy System").

With respect to claim 2, Wichert discloses the isolated electrical network according to claim 1, but does not expressly disclose the first power generator has a synchronous generator, which contains a converter with a dc voltage intermediate circuit with at least one first rectifier and an inverter. Wichert discloses using a bi-directional inverter (figure 1; page 212, lines 36-37).

De Zeeuw discloses a first energy producer (page 193, column 1, lines 15-16), a synchronous generator (page 193, column 2, lines 3-5), and a converter (figure 1; page 193, column 1, lines 19-21), which contains a rectifier, a dc link, and an inverter.

Wichert and De Zeeuw are analogous because they are from the same field of endeavor, namely, hybrid energy systems that utilize both a renewable energy source and an internal combustion engine. At the time of the invention by applicant, it would have been obvious to combine the hybrid energy system disclosed in Wichert with the synchronous generator disclosed in De Zeeuw in order to properly couple the AC power lines to supply the load.

With respect to claim 11, De Zeeuw discloses an additional power generator (figure 1, page 193, column 2, lines 27-31) and Wichert discloses a common dc voltage intermediate circuit (figure 1, "dc bus").

With respect to claim 12, De Zeeuw discloses a network-commutated inverter (page 193, column 1, line 44 to column 2, line 2).

With respect to claim 13, De Zeeuw discloses an electromagnetic coupling (figure 1, "clutch"), wherein the energy for operating the electromagnetic coupling is made available by an electricity storage device and/or by a primary power generator (figure 1; page 193, column 2, lines 8-11). It is inherent that the energy for operating the coupling must come from within the isolated system. Although De Zeeuw does not expressly disclose where the power is taken from, it would be obvious to a person of ordinary skill that the wind turbines or the controllable loads would supply the operating power.

With respect to claim 14, De Zeeuw discloses a seawater desalination/service water generation plant connected to the isolated electrical network, wherein the plant generates service water (drinking water) only when the power supplied by the first

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power generator is greater than the power consumption of the other electrical loads connected to the isolated electrical network (page 193, column 1, lines 1-14). De Zeeuw discloses that the isolated network is designed for supplying electricity to an area where no utility grid exists, and that the network has been used on a coastline. De Zeeuw also provides a discussion on how to prevent salt corrosion on the wind turbine. It would be obvious to a person skilled in the art to use this network in a locale where there are no established sources of electricity or drinkable water. De Zeeuw further discloses that excess energy may be routed to a controllable load (page 193, column 2, lines 15-20). Therefore, it would be obvious to supply power generated by the isolated electrical network to a seawater desalination/usable water production plant.

With respect to claim 16, De Zeeuw discloses a synchronous generator (figure 1, SM2; page 193, column 2, lines 3-10) is operable as a network generator, wherein the synchronous generator operates in a motor mode (page 193, column 2, lines 11-15, "synchronous compensator") with energy required from the first power generator.

If the internal combustion engine is turned off or disconnected from the system, the only source of energy is the primary power generator (wind turbines). Therefore, it is inherent that the first power generator would power the synchronous generator in motor mode.

With respect to claim 17, De Zeeuw further discloses the synchronous generator is connected to the internal combustion engine (figure 1; page 193, column 2, lines 8-11), and the synchronous generator is deactivated when the electrical power of the

primary power generator is greater or approximately the same as the electrical power consumption in the isolated electrical network.

With respect to claim 18, Wichert discloses the recited limitations, as discussed above in claim 1.

With respect to claim 25, De Zeeuw discloses the use of a synchronous generator as a network generator (figure 1, SM2; page 193, column 2, lines 3-10) for a network-commutated inverter (page 193, column 1, line 44 to column 2, line 2) for feeding an alternating current into the network, wherein the generator works in motor operation (page 193, column 2, lines 11-15, "synchronous compensator") and a drive of the synchronous generator is realized by providing at least one of energy from a flywheel and by electrical energy from a renewable-energy power generator (figure 1, SM1; page 193, column 1, lines 15-16).

With respect to claim 28, De Zeeuw discloses the control of the wind-power station (page 193, column 2, lines 41-46).

9. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wichert, in view of Da Ponte (US 6,175,217).

Wichert discloses the isolated electrical network according to claim 1, but does not expressly disclose a flywheel, which can be coupled to the second or a third generator and where the flywheel comprises a generator for supplying energy into the dc voltage intermediate circuit.

Da Ponte discloses at least one controllable source (column 1, lines 40-41; column 3, lines 57-62), whose output can be regulated by an energy storage device, such as a flywheel (figure 5, item 28; column 7, lines 50-53).

Wichert and Da Ponte are analogous because they are from the same field of endeavor, namely regulating the output of a hybrid energy system. At the time of the invention by applicant, it would have been obvious to a person of ordinary skill in the art to combine the hybrid energy system disclosed in Wichert with the flywheel energy storage device disclosed in Da Ponte and to couple the flywheel to the second generator in order to provide a electrical network that can cope with substantial variations in load requirements while also operating efficiently.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wichert, in view of Jaunich (US 6,605,880).

Wichert discloses the isolated electrical network according to claim 1, but does not expressly disclose a plurality of internal combustion engines, each operable to be coupled to a generator.

Jaunich discloses a plurality of secondary generators (column 3, lines 61-67), where the generators are internal combustion engines (column 3, lines 46-50).

Wichert and Jaunich are analogous because they are from the same field of endeavor, namely hybrid energy systems that utilize both a renewable energy source and an internal combustion engine. At the time of the invention by applicant, it would have been obvious to combine the hybrid energy system disclosed in Wichert with the multiple internal combustion engines disclosed in Jaunich in order to increase the power

capacity of the isolated electrical network to supply the quantity of power required by the loads.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wichert, in view of De Zeeuw, and in further view of Suzuki (JP 2000-073931A).

Wichert and De Zeeuw disclose the isolated electrical network according to claim 2, as discussed above. Wichert discloses a battery bank, as discussed above. Wichert and De Zeeuw, however, do not expressly disclose charge/discharge circuits between the electrical storage element and the dc voltage intermediate circuit.

Suzuki discloses a charging and discharging device placed between the electrical element and the dc voltage intermediate circuit (figure 1, item 5; abstract, lines 1-9). Suzuki discloses that the electrical element is a NaS battery (figure 1, item 6) and further discloses that the output power of the wind power generating equipment (figure 1, item 2) is passed through a rectifier (figure 1, item 3). Therefore, the output of the charging/discharging device is connected to the dc voltage intermediate circuit.

Wichert, De Zeeuw, and Suzuki are analogous because they are from the same field of endeavor, namely hybrid energy systems that utilize both a renewable energy source and an internal combustion engine. At the time of the invention by applicant, it would have been obvious to combine the hybrid energy system disclosed in Wichert and De Zeeuw, with the charging/discharging device disclosed in Suzuki. The motivation for doing so would have been to control the charging and discharging of the battery in order to feed a constant power to the isolated electrical network.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wichert, in view of Offringa (EP 046,530 A1).

Wichert discloses the isolated electrical network according to claim 1, but does not expressly disclose a pump storage device is provided, which receives its electrical energy from the primary power generator.

Offringa discloses uses variations in a wind turbine's power output to control a pump station, in order to pump water to increased heights (abstract, lines 16-20).

Wichert and Offringa are analogous because they are from the same field of endeavor, namely hybrid energy systems that utilize both a renewable energy source and an internal combustion engine. At the time of the invention by applicant, it would have been obvious to combine the hybrid energy system disclosed in Wichert with having the excess network power supplied to a pump station as disclosed in Offringa in order to apply excess power to a load in order to keep the network power output constant.

Conclusion


13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adi Amrany whose telephone number is (571) 272-0415. The examiner can normally be reached on weekdays, from 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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